Subject: ETS MPS/PM-1 (Aqua) Engineering Release 6.5 Delivery
Date: Mon, 29 Oct 2001 15:56:57 -0500
From: jcarlson@csc.com
To: wfuller@pop500.gsfc.nasa.gov

Willie,

We are pleased to deliver Release 6.5 of the ETS Multimode Portable
Simulator for PM-1 (MPS/Aqua). This engineering release delivery includes
adoption of the Aura Project Data Base (PDB) schema, removing the necessity
of maintaining the Aqua and Aura simulators on separate PCs. It also
contains code repairs to answer Discrepancy Reports (DRs) ETS0438, ETS0443,
and ETS0444, and an enhancement to the code repairing DR ETS0363. Complete
descriptions of the changes and enhancements are contained in the
attachments.

There are seven attachments to this letter.

Attachment A describes the capabilities included in this release.
Attachment B describes installation instructions for this release.
Attachment C describes special operating instructions for this release.
Attachment D contains the resolved DR descriptions
Attachment E contains the system limitations.
Attachment F contains an updated release history summary matrix.
Attachment G contains an updated Mission Systems Configuration Management
(MSCM) form.

Attachment C is being delivered as a zip file because its size might
overwhelm some mail systems. The updated software executable modules are
being delivered on CD-ROM. Two copies of the CD are being given to Guy
Cordier, who will forward one copy to Raytheon at Denver and will use the
other for installation on the MPS/Aqua simulator PCs in the Bldg 32 EOS ISR
and LSR at GSFC. The updated software is also being installed on the
serial card-equipped PCs in the Bldg 25 Simulations Operations Center and
on the portable PCs, in the event that any of those units are needed to
support upcoming Aqua data flows.

If you have any questions about this delivery, please do not hesitate to
contact me.

Dave Green
301-805-3420

(See attached file: AttachA.doc)(See attached file: AttachB.doc)(See
attached file: Attachc.zip)(See attached file: AttachD.doc)(See attached
file: AttachE.doc)(See attached file: AttachF.doc)(See attached file:
AttachG.doc)

CC: alan.johns@gsfc.nasa.gov, Alexander.Krimchansky.1@gsfc.nasa.gov,
     gcordier@rattler-e.gsfc.nasa.gov, kcklem@west.raytheon.com,
     arhabeger@west.raytheon.com, wjohnson@eoc.ecs.nasa.gov,
     rmesserly@mail.gblt.averstar.com, vhruland@west.raytheon.com,
     pburrows@csc.com, jcarlson@csc.com, klavery@pop500.gsfc.nasa.gov,
     Van.Grant@honeywell-tsi.com, eshurie@pop400.gsfc.nasa.gov,
     enoone@csc.com, fxu@csc.com, rwinters@mail.gblt.averstar.com,
     diana.sexton@averstar.com

<u>Attachment A – Summary of Operational Changes</u>

Operational Capabilities of MPS/Aqua Release 6.5

New or modified capabilities with this release are noted in **Bold**.

Telemetry:

- Transmit telemetry in IP or Serial (clock/data) mode
- Pack telemetry packets and CLCWs into CADUs when in Serial mode
- Generate one stream of CADUs when in Serial mode
- Generate one stream of telemetry formatted as EDUs when in IP mode
- Start or stop one telemetry stream
- Ingest the PDB files
- Generate telemetry packets from information contained in the PDB
- Maintain telemetry nodes from information contained in the PDB
- Populate telemetry packets with data values from information contained in the PDB
- Generate correct secondary headers for SC, GIRD, and SUROM-TIE (no secondary header) telemetry packets using information from the PDB
- Generate instrument telemetry packets using secondary key information from the PDB
- Display EDU data when in IP mode
- Display CADU data when in Serial mode
- Set values into telemetry points by mnemonic
- Display telemetry node values by mnemonic
- Convert telemetry values to Engineering Units (EU) for display using information from the PDB
- Accept operator-entered telemetry values in EU and convert to Raw Counts for inclusion in telemetry packets
- Reset packet count for the telemetry stream
- Static packet data can be overwritten (by byte location) and by modification of telemetry mnemonic
- Incrementing packet sequence counters per APID
- Generation of individual APIDs can be inhibited
- Telemetry logs will be created (viewable by offline utility)
- Packet Headers and Packet Data are updated
- Packet data can be shown in hexadecimal or octal format and addressed in hexadecimal or decimal form
- Packet Sequence Counters can be reset
- Packet Sequence Counters can be modified
- Packet Version field can be modified
- Packet APID field can be modified
- Packet Type field can be modified
- Packet Secondary Header Flag field can be modified
- Packet Length field can be modified

- CCSDS Unsegmented TimeCode (CUC) can be modified
- Packet rate may be controlled
- CLCW transmitted via EDUs when in IP mode
- IP packets are transmitted with variable lengths
- CLCW can be overridden by the operator
- Transmission of CLCW can be inhibited when in IP mode
- Scenario file (script) capability to set telemetry nodes and buffers
- Set telemetry data values in response to spacecraft commands received (end-item verification)
- Set initial telemetry data values at initialization
- Allow simultaneous display and set of multiple telemetry container items via GUI screens
- Simulate spacecraft memory dumps
- Use the PDB telemetry state text file to locate end-item verifier values
- Maintain and update telemetry data values in APID 1000
- Telemetry parameters may be set and viewed by Parameter ID
- CLCW Transmit Start and Stop is coupled to H/K Telemetry Start and Stop
- Telemetry values may be set using simple expressions
- Telemetry values may be set using trigonometric expressions
- Telemetry values may be set using Boolean expressions
- Telemetry values may be set to other telemetry mnemonic values
- Telemetry values may be saved in intermediate variables for later use
- TES Segmented Packets are emulated
- CLCW Transmit rate may be set by the operator
- Telemetry data values are validated for fit into packet space
- Current enable status and transmit rate for all APIDs is viewable via status display
- vcProcessor module discards VC63 VCDUs when creating files for playback
- The VCDU Sequence Counter field occupies 32 bits in APID 1000.
- **The PDB Red/Yellow Limits file is used to refine initial telemetry values.**
- **Signed telemetry data values are validated as one's and two's complement integers upon user input, as appropriate.**
- **Displays of telemetry and command container item names may be saved and restored.**

Command:

- Ingest command-related PDB files
- Identify commands using information from the PDB
- Display event messages with command mnemonics and submnemonics
- Set telemetry points in response to commands received (end-item verification) using information from the PDB
- Recognize spacecraft Command Loads
- Display Command Load data

- Copy Command Load data to a Memory Dump buffer
- Inhibit the Command Load data copy facility via operator directive
- Validate checksums of received Command Loads
- Ingest type AD, BC, and BD commands
- Display Total CLTUs count
- Reset Total CLTUs count
- Display Rejected CLTUs count
- Reset Rejected CLTUs count
- Display Instrument commands count
- Reset Instrument commands count
- Display Spacecraft commands count
- Reset Spacecraft commands count
- Display BC commands count
- Reset BC commands count
- Display BD commands count
- Display current Spacecraft CLCW
- Update Spacecraft and instrument CLCW
- Display current Instrument CLCW
- Validate commands based on individual, all, or none of the following validation criteria: CLTU Start and Tail Sequences, BCH Error Code, Transfer Frame Header Fields, FARM (Valid Frame Sequence), User Command Packet Header
- Generate event messages based on ingest
- Log raw commands (viewable by offline utility)
- Display raw command in hexadecimal or octal format addressed in either hexadecimal or decimal fashion
- Display command packet headers for instrument commands
- Display command packet headers for spacecraft commands
- Update command accepted and rejected counters in telemetry
- Command submnemonics are saved in container items and may be viewed after command receipt

Time:

- Maintain and update SC time (GIRD)
- Maintain and update GMT time
- Synchronize SC and GMT times

General:

- Control all simulator module functions via scenario scripts
- Selection of scenario scripts may be via operator type-in or via a file selection browse window
- Start scenario scripts in response to commands received
- Start a scenario script from a scenario script
- Execute multiple scenario scripts simultaneously
- Provide operator control of multiple scenario scripts started by the operator
- Save the last 10 operator directives
- Allow editing of saved operator directives before re-execution
- EDOS Service Header (ESH) fields may be viewed
- ESH field contents may be modified by the operator
- Validation of Command Data Block (CDB) header fields of commands received
- Modification of expected values of CDB header fields
- All viewable buffers may be displayed
- Addition, deletion, and modification of command end-item verifiers via SQL scripts
- Logs of commands received or telemetry transmitted may be retransmitted via IP output or Serial output
- Expected Spacecraft ID may be modified in EOSGS module
- CLCW ESH field contents may be modified by the operator
- Event messages to the screen may be inhibited or enabled by severity (color)
- Scenario scripts may contain IF-then-ELSE-ENDIF and WHILE-ENDWHILE conditional execution directives
- The Scenario module may interface with multiple modules
- Intermediate variables A – Z permit saving values as real numbers
- Intermediate variables Aq – Zq permit saving values as long integers
- **The Aura PDB DFCD schema has been adopted**
- **The Load Database window can accept a 32 character version designator**
- **The Serial Output module can accept directives from the operator or via a scenario script.**
- **The Event Message window has been separated from the project window and has been made resizable.**

Attachment B – Installation Instructions for MPS/Aqua Release 6.5

This attachment contains the instructions for installing the PDB files and the MPS/Aqua Release 6.5 Server and Client. The information presented in this attachment is divided into three major sections. The first section contains abbreviated installation instructions, the second contains a summary of the installation changes, and the third section contains detailed instructions for performing initial and subsequent installations.

The information presented in this attachment has been checked for accuracy by the independent test team.

<div style="border:1px solid black">

IMPORTANT

Once the Oracle database has been set to the Aura schema definition it is not possible to run Release 6.4 of the MPS/Aqua simulator using that database.

</div>

B-1: Abbreviated Installation Instructions

These instructions are intended for the experienced user performing an installation on a PC where Oracle has already been installed.

1. Install the MPS/Aqua Release 6.5 Client software by executing the **Setup.exe** program in the Client folder of the CD.
2. Install the MPS/Aqua Release 6.5 Server software by executing the **Setup.exe** program in the Server folder of the CD.
3. If the new database scripts were not previously installed, install them by executing the **Database.bat** program in the Database folder of the CD.
4. Create a folder under **D:\mps_pdb\PM1PDBs** to hold the Aqua PDB source files. Copy the Aqua PDB source files into this new folder. Twelve files are needed. See the list in Paragraph B-3.5 for the files to be copied.

5. If the new Aura-compatible tables were not previously created, as during installation of MPS/Aura Release 3.0 Beta, navigate to the **D:\mps_pdb\GenericScripts** folder and execute the **Build_PDB_Tables.bat** batch program. This creates the Aura-format tables within Oracle. **ONLY PERFORM THIS STEP ONCE!**

6. Navigate to the **D:\mps_pdb\PM1Scripts** folder and execute the
   Load_Next_PM1_PDB.bat batch program. This will ingest the PM-1 PDB into
   Oracle. There are two important points to follow:

   - When navigating to the folder containing the PDB source files, double-click
     each folder name except the last. The folder containing the PDB files is
     <u>selected</u>, not opened.
   - Spaces are not permitted when entering the PDB version designator.

7. When initializing the MPS/Aqua simulator for the first time, any IP-mode projects
   needed must be built and saved.

B-2: Summary of changes

Several changes had to be made to accommodate the Aura PDB schema changes while
allowing Aura and Aqua PDBs to reside in the same Oracle repository. These changes
are:

   - The PDB root folder is now **D:\mps_pdb.** Sub-folder details are given in
     Paragraph B-3.4.
   - The Oracle ingest scripts now attach a spacecraft name to every record. The field
     name is **sc_name**. In addition to the version designator, all SQL queries must
     now include either "sc_name = 'AURA'" or "sc_name = 'PM1'". The single
     quotes are required syntax. The MPS simulators automatically append the
     correct spacecraft name when accessing the Oracle database.
   - PM1 was selected as a spacecraft name vs. Aqua to minimize the chance of
     errors.
   - The last Aura PDB loaded AND the last PM1 PDB loaded will each be the
     default for that spacecraft name within Oracle.
   - The version designator has been increased to 32 characters. **Spaces are not
     allowed. All alphabetic characters will be translated to upper case.**
   - The batch file to create the Oracle tables has been renamed to
     Build_PDB_Tables.bat
   - There is one batch file to ingest all Aura PDBs. It is named
     Load_Next_Aura_PDB.bat
   - There is one batch file to ingest all Aqua (PM1) PDBs. It is named
     Load_Next_PM1_PDB.bat

B-3: Detailed Installation Instructions

This is the complete procedure for performing an initial or subsequent installation of the MPS/Aqua simulator Release 6.5, and associated software, data files, and COTS programs on a PC. There are three parts to the installation:

- Oracle Installation
- Simulator Installation
- script installation and PDB ingest

Materials Needed:

- The CD containing the Oracle software
- One or more versions of the Aura Project Data Base (PDB)
- The CD containing the MPS/Aqua Release 6.5 software

B-3.1: Oracle Installation

Installation of the Oracle database product need only be performed if the simulator is being installed on a new PC or one that has had its hard drive replaced. If Oracle is already installed on the PC then skip to Paragraph B-3.2.

Two separate Oracle product groups are required for the MPS simulator – Oracle 8i Enterprise 8.1.5.0.0 and Oracle 8i Programmer 8.1.5.0.0. Both product groups are contained on a single CD. There are a few points to keep in mind:

- The installing account must have administrator privileges.
- The machine selected as the Oracle server must have a D: drive.
- The server must be re-booted after installing both product groups.

Installation Instructions for Oracle8i Enterprise 8.1.5.0.0

Log in using the Administrator account. The entire installation should take no more than 10 minutes.

Panel	Panel Title	User Action
1.	Oracle8i Enterprise Edition for Windows NT	1. Select **Install/Deinstall Products**
2.	Oracle Universal Installer (O. U. I.)	1. Select **Next**
3.	File Locations	1. Source… Accept the default 2. Destination – Name Enter **DEFAULT_HOME** 3. Destination – Path Enter **D:\orant** 4. Select **Next**

Panel	Panel Title	User Action
4.	Available Products	1. Select **Oracle8i Enterprise Edition 8.1.5.0.0** 2. Select **Next**
5.	Installation Types	1. Select **Typical Configuration** 2. Select **Next**
6.	Location for Oracle Documentation	1. Select **Hard Drive** 2. Select **Next**
7.	Database Identification	1. Global Database Name Enter **oracle.world** 2. Select **Next**
8.	Summary	Select **Install**
8a.	Install	(Wait)
8b.	Configuration Tools	(Wait)
8c.	Oracle Database Configuration Assistant Alert	Click on **OK**.
9.	End of Installation	Select **Next Install**

Installation Instructions for Oracle8i Programmer 8.1.5.0.0

Panels 1 and 2 will only be seen if Oracle Programmer is being installed separately. If this is a continuation of the Oracle installation, control will go immediately to panel 3.

Panel	Panel Title	User Action
1.	Oracle8i Enterprise Edition for Windows NT	1. Select **Install/Deinstall Products**
2.	Oracle Universal Installer (O. U. I.)	1. Select **Next**

3.	File Locations	1. Source...
		   Accept the default
		2. Destination - Name
		   Enter **DEFAULT_HOME**
		3. Destination - Path
		   Enter **D:\orant**
		4. Select **Next**

4.	Available Products	1. Select **Oracle Programmer 8.1.5.0.0** 2. Select **Next**
5.	Installation Types	1. Select **Custom Installation** 2. Select **Next**
6.	Available Product Components	1. Select **ProC/C++** which automatically selects other items from the list. 2. Select **Next**
7.	Summary of Products	1. Select **Install**
8.	Install	**Wait** (When installation completes, the next panel pops up automatically.)
9.	End of Installation	1. Select **Exit** and Select "Yes" in the Confirmation pop-up box that appears.
10.		Close the Oracle Installation program by clicking on the X in the upper right corner.

All Oracle software required to run the MPS simulator has been installed. You must now re-boot your workstation and log in as the desired simulator user. The Oracle services will not begin running until you do this.

B-3.2: Java Runtime Engine Installation

Installation of the Java Runtime Engine product need only be performed if the simulator is being installed on a new PC or one that has had its hard drive replaced. If Java is already installed on the PC then skip to Paragraph B-3.3.

1. Insert the CD containing the MPS/Aqua Release 6.5 into the CD drive and navigate to it using either Windows Explorer or My Computer.

2. Double-click on the file named **jdk1_2_2-win.exe.** This will cause the Java Runtime Engine to be installed. Accept all defaults when responding to the installation prompts.

B-3.3: Installation of the Aqua Server and Client software

The steps in this paragraph cause the MPS/Aqua Client and Server software to be installed on the PC.

1.   Insert the delivery media into the appropriate drive.

2.   To install the Aqua Client:
    a) On the desktop, click on the Start button, and then select Run from the resulting menu.
    b) When the Run window appears select the Browse… button.
    c) From the Browse Window, select the Removable drive that contains the installation CD.
    d) Click on the Client folder.
    e) From within the Client folder, double click on the **Setup.exe** filename.
    f) A window with the title "Run Window" will appear. Click on the Okay button to proceed to the next step.
    g) The screen will be filled with an Aqua Client background and a smaller window with the title "Welcome to Aqua Client 6.5" will appear. Click on the Next button to proceed to the next step.
    h) The next window will contain the licensing agreement. Click on Yes to accept the agreement and proceed.
    i) After all of the files are copied, a window with the title "Setup Complete" will appear. Click on the Finish button to end.
    j) An Aqua Client icon will now be installed on the desktop.

3.   To install the Aqua Server:
    a) On the desktop, click on the Start button, and then select Run from the resulting menu.
    b) When the Run window appears select the Browse… button.
    c) From the Browse Window, select the Removable drive that contains the installation CD.

d) Click on the Server folder.
e) From within the Server folder, double click on the **Setup.exe** filename.
f) A window with the title "Run Window" will appear. Click on the Okay button to proceed to the next step.
g) The screen will then be filled with an Aqua Server background and a window with the title of "Welcome to Aqua Server 6.5" will appear. Click the Next button to proceed.
h) The next window will contain the licensing agreement. Click on Yes to accept the agreement and proceed.
i) Next a window will show the completion status as the files are copied. When the copying is complete click on the Finish button to finish the installation.
j) An Aqua Server icon will be installed on the desktop.

B-3.4: Installation of the Oracle scripts

Installation of the Oracle scripts need only be performed if the simulator is being installed on a new PC or one that has had its hard drive replaced, or the scripts were not installed as part of the MPS/Aura Release 3.0 installation. If the Oracle scripts were already installed as part of the MPS/Aura Release 3.0 installation, then skip to Paragraph B-3.5.

A batch file is being provided which will create the directory structure. When executed, it will create the following directory structure with needed batch files, SQL scripts, and Java programs, minus the PDB-specific folders, on the D drive of the hard disk.
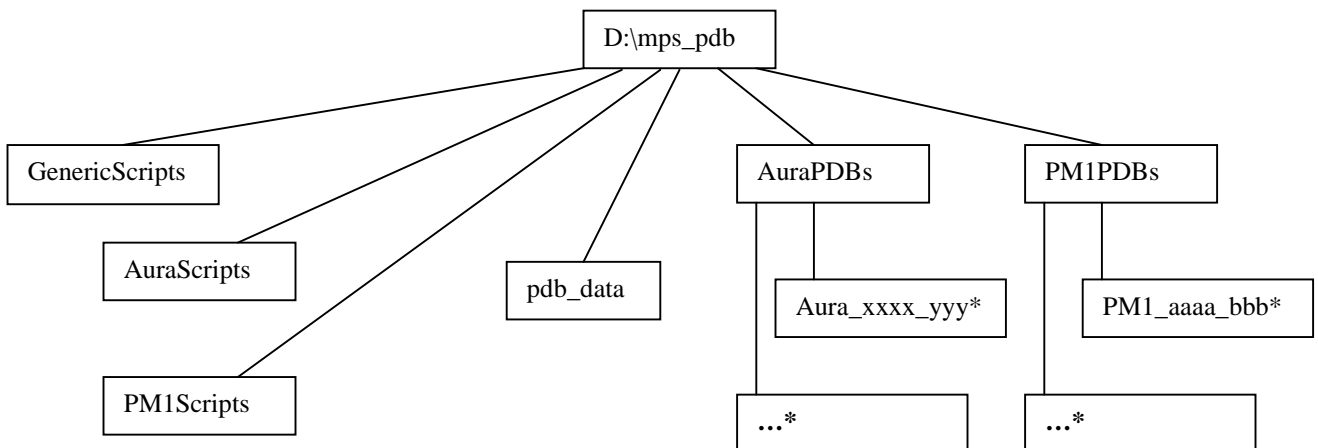
* Folders containing Aqua or Aura PDB source files.

To install the database scripts:

    a) Insert the delivery media into the appropriate drive.
    b) On the desktop, click on the Start button, and then select Run from the resulting menu.
    c) When the Run window appears select the Browse… button.
    d) From the Browse Window, select the Removable drive that contains the installation CD.
    e) Click on the Database folder.
    f) From within the Database folder, double click on the **Database.bat** filename.

B-3.5: PDB Download

The next step is to copy the PDB onto the hard drive. You will need at least one version of the Aqua PDB. The following PDB flat files are needed, where *xxxxxx* corresponds to the version portion of the filename:

cmd_desc_*xxxxxx*.pdb
cmd_fixdata_*xxxxxx*.pdb
cmd_parm_*xxxxxx*.pdb
cmd_vardata_*xxxxxx*.pdb
cmd_verify_*xxxxxx*.pdb
tlm_calcurve_*xxxxxx*.pdb
tlm_desc_*xxxxxx*.pdb
tlm_dstate_*xxxxxx*.pdb
tlm_packet_*xxxxxx*.pdb
tlm_parm_*xxxxxx*.pdb
tlm_polyconv_*xxxxxx*.pdb
tlm_rylim_*xxxxxx*.pdb   **NEW**

Add a folder to the directory structure shown above, under the **PM1PDBs** folder, to hold the source files of the Aqua PDB.

Copy the desired version of the PDB into the folder just created. If desired, more than one version of the PDB may be copied. Be sure to copy each version into its own folder.

B-3.6: Database setup and PDB Ingest

The next steps are concerned with creation of the Oracle database and ingest of the PDB. If the action described has already been performed you may skip to the following step.

1. Create the simulator user account with userid **stest**, password **etsmps1:**

   Using either Windows Explorer or My Computer, navigate to the **D:\mps_pdb\GenericScripts** folder and double-click on the **CreateMPSPDB.bat** batch program.

2. Create the PDB tables within the Oracle database:

   Locate and double-click on the **Build_PDB_Tables.bat** batch file within the **D:\mps_pdb\GenericScripts** folder

3. Load the Aqua PDB into Oracle:

   Repeat this step as many times as necessary to ingest all versions of the Aqua PDB that you have placed on the hard drive.

   Note that the last PDB version ingested into Oracle will become the default for Aqua.

   Using Windows Explorer (or My Computer), navigate to the **D:\mps_pdb\PM1Scripts** folder, locate the **Load_Next_PM1_PDB.bat** batch file, and execute it by double-clicking on the filename. This batch file will ingest Aqua PDBs into Oracle. It does not matter whether this is the first or any subsequent version of the PDB

   As the batch file executes it will call various batch programs, executable programs, Java programs, and SQL scripts in the **GenericScripts** and **AuraScripts** folders.

   1. During the batch file execution you will be prompted to specify the path to the PDB source files. Follow these steps to do so:

   - In the pop-up window titled **Please select a directory** click on the Browse button. That is the button with three dots on the right of the window.
   - In the resulting **File Open** window navigate through the directory structure by double-clicking on folder names until the desired folder appears. Do not open that folder. Select it by single-clicking on its name.
   - Next, single-click on the Open button. The **File Open** window will disappear.

- It may take a minute for the directory path to appear in the filename box of the **Please select a directory** window. When it does, click the **Close** button. All PDB files have now been copied to the **pdb_data** folder.

2. Also during the batch file execution you will be required to type in a version designator. You may enter 1 – 32 characters to uniquely identify this version of the PDB. All alphabetic characters will be translated to capital letters.

4. Ingest Verification

You may verify the correctness of the PDB ingest by checking the *.log files in the **D:\mps_pdb\PM1Scripts** folder.

You may also check the ingest by using SQL*Plus to check the integrity of the PDB within Oracle. While there are many checks that may be run, the following two SQL queries should suffice.

Invoke SQL*Plus and enter the query:

   select * from versions;

The version designator you entered should appear in the resulting list. Any alphabetic characters will have been translated to capital letters.

Enter the query:

   select count(*) from cmd_full_fixed where version='<your version designator>**' and sc_name='PM1';**

The result should be a non-zero record count.

Attachment C - Special Operating Instructions

This attachment contains new special operating instructions for MPS/Aqua Release 6.5. The information presented in this attachment has been checked for accuracy by the independent test team.

A User's Guide is being updated to include the information presented in this section. The User's Guide will be available from the ETS home page at
 http://esdis-it.gsfc.nasa.gov/ ETS/ets.html.

PDB Ingest Enhancements

The PDB schema described in the Aura PDB Data Format Control Document (DFCD) has been adopted for storing the database flat files into Oracle. This allows storing of Aqua and Aura PDBs in the same repository.

> MPS/Aqua Release 6.4 or earlier and MPS/Aura Release 2.0 will not be able to interface with Oracle once the new schema has been applied.

The directions for creating the new PDB tables within Oracle are given in Attachment B, Paragraph B-3.6, steps 1 and 2.

The following steps are to be followed to ingest each new PDB into Oracle once the tables have been defined.

Note that the last PDB version ingested into Oracle will become the default for Aqua.

1. Create a folder under **D:\mps_pdb\PM1PDBs** and load the new source PDB files into it. Make no changes to the file names. The Java program that copies the files to the **pdb_data** folder expects the filenames to be in the format described in Paragraph 4.2.2.6 of the Aura DFCD. (Example: tlm_packet_xxxxxx.pdb, where xxxxxx is the version designator.)

2. Using Windows Explorer (or My Computer), navigate to the **D:\mps_pdb\PM1Scripts** folder, locate the **Load_Next_PM1_PDB.bat** batch file, and execute it by double-clicking on the filename. This batch file will ingest Aqua PDBs into Oracle. It does not matter whether this is the first or any subsequent version of the PDB

   As the batch file executes it will call various batch programs, executable programs, Java programs, and SQL scripts in the **GenericScripts** and **PM1Scripts** folders.

3. During the batch file execution you will be prompted to specify the path to the PDB source files.
   - In the pop-up window titled **Please select a directory,** click on the Browse button. That is the button with three dots on the right of the window.
   - In the resulting **File Open** window navigate through the directory structure by double-clicking on folder names until the desired folder appears. Do not open that folder. Select it by single-clicking on its name.
   - Next, single-click on the Open button. The **File Open** window will disappear.
   - After the directory path appears in the filename box of the **Please select a directory** window, click the **Close** button.
   - At this point the PDB files will be copied to the **pdb_data** folder, renamed, and modified to be ingested into Oracle.

4. Also during the batch file execution you will be required to type in a version designator. You may enter 1 – 32 characters to uniquely identify this version of the PDB. All alphabetic characters you enter in the version designator will be translated to capital letters.

Operation of earlier versions of the MPS/Aqua Simulator

MPS/Aqua Release 6.4 and earlier will not be able to interface with Oracle once the table schema is updated to the Aura format. If another PC with Oracle installed is connected to the same subnet, and has the Aqua version of the PDB schema installed, it is possible to run an older version of the Aqua simulator by connecting and loading the Aqua PDB across the network.

It is also possible to run the MPS/Aqua Release 6.5 simulator on a PC that does not have the new Oracle table schema installed if it can be connected to Oracle across a network.

Follow these steps to set up the proper Oracle services.

To use this capability, Oracle must be installed on both computers and an alias for the remote server must be created on the PC where the simulator will run. This alias is called a Service Name. To create a Service Name, do the following:

1. Bring up **SQL*Plus** on the PC containing the Oracle database you wish to use and type "SELECT NAME FROM V$DATABASE;". The last line of the resulting output will be the database name. You will need this name when performing step 7 below.

   All remaining steps are performed on the PC where the simulator will run.

2. Start the Net8 Assistant by selecting **Start** -> **Programs** -> **Oracle** -> **Network Admin** -> **Net8 Assistant**. (The exact path may be different.)

3. Click the **Net Service Names** folder then select the *green* "+" in the upper left-hand corner to add a service.

4. The first panel prompts for a **Service Name**. It is just an alias so enter something short and meaningful then select Next.

5. Make sure **TCP/IP** (Internet Protocol) is highlighted and then select Next.

6. Enter the IP address of the remote database server in **Host Name** field, accept the default Port Number (1521), then select Next.

7. Select the *Oracle 8I release 8.0 or previous* radio button. Enter the name of the default database on the remote server in the **Oracle SID** field, then select Next.

8. Do **NOT** select **Test**. Click on **Finish**. You should see your new **Service Name** (with *.world* appended to it) under the **Net Service Names** folder.

9. Select **File** -> **Save Network Configuration**.

10. Select **File -> Exit.**

11. To test the connection, bring up **SQL*Plus** and attempt to connect to the remote server by entering your new **Service Name** in the **Host String** field (don't enter the *.world*). Enter the usual **User Name** and **Password**.

12. When initializing the simulator, enter the **Service Name** into the **Host** field of the **Load Database** window.

Save and Restore of Display/Set Container Items

A set of mnemonics entered into a Display/Set Container Items window may now be saved for later use.

To save a set of container item names, click the **Save** button at the bottom of the window. You will be prompted to choose a path and enter a filename under which the set of mnemonics will be saved. By default, the mnemonics will be saved in a file in the Client folder.

To restore a set of container item names, click the **Restore** button at the bottom of the window. You will be prompted to choose a path and filename from which the display will be restored. After restoring the display, click **Apply** to cause updates to begin.

Local Variable Usage

The 26 local variables A through Z described in earlier releases have been updated to be true container items, and to hold real numbers. This means that they may be viewed as well as set, and may be tested within scenario scripts. Additionally 26 local variables, named AQ through ZQ, have been added to hold 64 bit integers.

These local variables are available only within the SCPM1 module.

An example of using these local variables within a scenario script follows:

```
; Conditional Scenario example using local variables
;
set CDH_SS_ISASUUSYNC 0

set IQ 0

sleep 1000
while (IQ < 10)

   set CDH_SS_ISASUUSYNC += 1
   sleep 1000

   if (MOD_CR_SR_GRAT_CH_B == 0)
        SET MOD_CR_SR_GRAT_CH_B 1
        set IQ += 1
   else
        set MOD_CR_SR_GRAT_CH_B 0
        set IQ += 2

        ; What follows is an example of saving a tlm value
        ; in case it changes
        set B = GNC_SS_STAOUT1W22
   endif
endwhile
; end
```

Telemetry Data Value Validation

The values of 1's and 2's complement signed integers, when entered by the operator, are now checked to ensure that the signed value will fit into the packet space. For example, given that a telemetry parameter is an 8-bit 2's complement signed integer, any entry that is more negative than –128 or more positive than 127 will be rejected by the simulator with an error message. The parameter will be set to zero.

Serial Output Module Enhancements

With Release 6.5 the Serial Output module has been modified so as to accept directives from the directive entry line or from a scenario script. The main purpose of these enhancements is to permit changing the output frequency via a scenario script. The figure on the next page shows the Serial IO Project being delivered with this release. It is annotated with the scenario module link numbers. The following scenario script will change the transmit rate to 4k. This script, which is being included in the delivery, may be used as a guide for writing other rate change scripts.

```
; Scenario script to switch serial telemetry transmit to 4k
; Created by E. Quintin on 10/15/2001
;  That "set SerialZZChannel  0"  line must be there!
;
; ZQ is used for scenario script coordination
; This script sets it to zero
; The subordinate scripts set it to one when they are finished
; This script waits for it to go to one

; Stop telemetry transmission
set ZQ 0
start scenario    Stop all APIDs of the 031501 PDB.txt
while (ZQ == 0)
    sleep 1000
endwhile
;
set SCPM1EnabledCh1 0
;
#3 set serialfrequency 4096
   set SerialZZChannel 0
;
#1 set ZQ 0
   start scenario    Start 4k from 031501 PDB.txt
while (ZQ == 0)
    sleep 1000
endwhile
;
; Restart telemetry transmission
set SCPM1EnabledCh1 1
;
; end
```
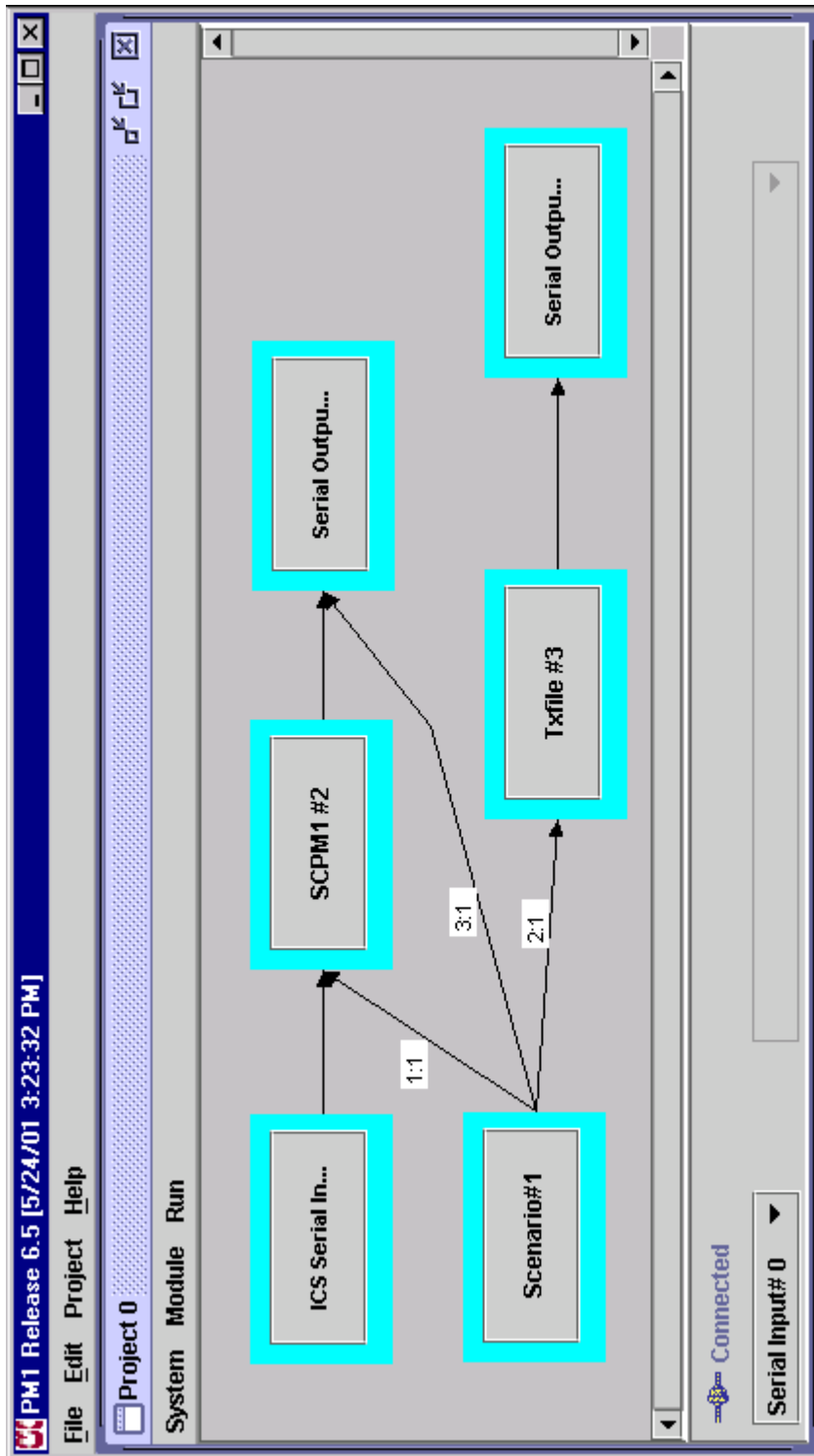
Miscellaneous

- In response to user requests to make the initial setup easier, boilerplate Projects for Serial mode transmission and playback file creation are being delivered with the software.

- The PDB Red/Yellow Limits file is now used when setting initial telemetry values. If the telemetry parameter has an entry in the Red/Yellow Limits file, the simulator sets its value to the midpoint between the Yellow Low and Yellow High limits.

- The Event Message window has been separated from the module window and made resizable. In addition, the Vertical Scroll Bar Slider will now stay where placed when it is moved away from the bottom of the Scroll Pane. To view new Event Messages, move the Scroll Bar Slider to the bottom of the Scroll Pane.

Attachment D – Resolved Discrepancy Reports

The following Discrepancy Reports (DRs) and Change Requests (CRs) have been closed by and are being delivered with MPS/Aqua Release 6.5. In addition, an improvement is being made to the logic to answer DR ETS0363, which was closed in MPS/Aqua Release 6.3. The DRs/CRs are listed in the table below, which provides the DR/CR Number, Status, Severity, and a short description. A full description of each DR/CR follows the summary table. Complete information on all DRs/CRs may be accessed via the Internet at address http://iree.gsfc.nasa.gov/ddts/.

Summary of Closed Discrepancy Reports

Critical (Severity 1)	Urgent (Severity 2)	Routine (Severity 3)	Change Requests	Total
0	0	3	0	3

Status Definitions

N – New   A – Assigned Analysis   R – Analysis Entered
V – Assigned Verification T – Tested   C – Closed
W – Withdrawn   P – Postponed   X – Duplicate

ETS No.	SMO No.	Type	Severity	Description
ETS0438	SMOdr10435	DR	3	MPS initial values cause out-of-limit alarms at EMOS
ETS0443	SMOdr11451	DR	3	While loop iterations are limited
ETS0444	SMOdr11454	DR	3	Database load program cannot take spaces in pathname

```
DR:    ETS0438              Related NCR:                    Submitted: 010430
Status: ASSIGNED-ANALYSIS    Class: ETS              Asgnd-Analysis: 010611

  Title: MPS initial values cause out-of-limit alarms at EMOS
SUBMITTAL INFORMATION                    ANALYSIS INFORMATION
 Project:       ETS                      Assignee1/Org: Ernest Quintin
 DR Type:     Problem                    Phone: 301-805-3649
 Rel/Ver:       6.2                      Email: equintin@csc.com
 Subsystem:    MPS-PM/Aqua               Assignee2/Org:
 Module:     Simulator                   Phone:
 Affected-Requirement:                   Email:
 Test Phase:   in-field use              Date due (Sev=1,2):
 Severity:      3
 Date found:   010427
 Location:     Denver
 Submitter:    Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email:      equintin@csc.com

************ Problem (Added 010430 by equintin) ***********
Please describe the problem you are experiencing below, including
what you did, what you expected to happen, and what actually happened:

MPS presets all telemetry points to a midpoint of possible data
values.  This causes numerous out-of-limit alarms at EMOS when
MPS telemetry data is initialized.

Reported by Vince Ruland.
```

DR: ETS0443   Related NCR: Submitted: 010719
Status: NEW   Class: ETS

  Title: While loop iterations are limited
SUBMITTAL INFORMATION
 Project: ETS
 DR Type: Problem
 Rel/Ver: 6.3
 Subsystem: MPS-PM/Aqua
 Module: Simulator
 Affected-Requirement:
 Test Phase: ops test
 Severity: 3
 Date found: 010629
 Location: GSFC
 Submitter: Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email: equintin@csc.com

************ Problem (Added 010719 by equintin) ***********
Please describe the problem you are experiencing below, including
what you did, what you expected to happen, and what actually happened:

Testing of scenario scripts requested by the FOT for SSR emulation has
shown that While loops cannot run for more than about 1000 iterations
without crashing the scenario dll executable.

A workaround is to exit the loop, then call the scenario script from
itself.

```
DR:   ETS0444               Related NCR:                    Submitted: 010719
Status: NEW                 Class: ETS
```

  Title: Database load program cannot take spaces in pathname
SUBMITTAL INFORMATION
 Project: ETS
 DR Type: Problem
 Rel/Ver: 6.3
 Subsystem: MPS-PM/Aqua
 Module: Simulator
 Affected-Requirement:
 Test Phase: acceptance test
 Severity: 3
 Date found: 010629
 Location: GSFC
 Submitter: Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email: equintin@csc.com

************ Problem (Added 010719 by equintin) ***********
Please describe the problem you are experiencing below, including
what you did, what you expected to happen, and what actually happened:

The Java program that copies PDB files and truncates their names for
ingest into Oracle cannot locate the source folder if there are spaces
in the pathname.

The following DR was corrected in MPS/Aqua Release 6.3. Additional logic has been added to the code to validate one's and two's complement signed integers.

```
DR:   ETS0363              Related NCR:                   Submitted: 991217
Status: ASSIGNED-ANALYSIS    Class: ETS               Asgnd-Analysis: 000117

  Title: Telemetry data values entered by operator are not validated
SUBMITTAL INFORMATION                    ANALYSIS INFORMATION
 Project:      ETS                       Assignee1/Org: Ernest Quintin
 DR Type:   Problem                      Phone: 301-805-3649
 Rel/Ver:      3.0                       Email: equintin@csc.com
 Subsystem:   MPS-PM/Aqua                Assignee2/Org:
 Module:    Simulator                    Phone:
 Affected-Requirement:                   Email:
 Test Phase:   acceptance test           Date due (Sev=1,2):
 Severity:     3
 Date found:   991217
 Location:     GSFC
 Submitter:   Ernest Quintin
 Organization: ETS Dev Group
 Phone number: 301-805-3649
 Email:      equintin@csc.com

************* Problem (Added 991217 by equintin) ***********
No validation is being performed on the values entered in the
Set Directive Window. If the value entered exceeds the number
of bits specified for the telemetry point, high order bits are
truncated when the packet is built. If you enter a hex value,
the telemetry point gets set to zero. Binary values are
interpreted as decimal. In addition, the system does not notify
the user concerning the invalid entry




************* Admin Comment (Modified 010402 by ckolb) ***********
3/30/2001 - Per DRB, this problem will be fixed in Aura Release 2.

01/05/01 DRB: Per developer, the fix for this will be included
in Release 6.2, scheduled for January 26 delivery.
```

Attachment E – System Limitations

E.1 MPS/Aqua Release 6.5 Limitations

The following limitations apply to MPS/Aqua Release 6.5. Some of these are Discrepancy Reports (DRs) against SIMSS baseline products and have been recorded in their DR repository.

Problem Description	Workaround
The event message window can accept no more than 50 messages per second. The Scenario module can easily overrun this limit and flood the GUI with messages.	Use Sleep directives to slow scenario files to 50 directives per second or less.
If a container item name such as a telemetry mnemonic is entered into multiple displays of the *Display/Set Container Items...* window and updated in a higher numbered display, the update will not be reflected in lower numbered display(s).	Do not duplicate container item names.
When using SQL*Plus to select entries from the Oracle calcurve table via the conversion type field, *conv_type*, it is necessary to put a space after the type entry. e.g. "U_5D ", not "U_5D".	Given at left.
Nested IF statements will not always work correctly in scenario scripts.	Use either IF-THEN-ELSEIF or invoke another script.
The negate operator does not always work correctly in scenario scripts. e.g. if !(A==0) if true, then !(!(a==0)) should be false. *This is SIMSS defect #325.*	Avoid use of double negation.

Attachment F - Release History Summary Matrix

Attached is the release history summary matrix, which reflects the MPS/Aqua Release 6.5 delivery. Modules inherited from the SIMSS baseline have the SIMSS Release Number, while the MPS/Aqua modules EOSGS and SCPM1 have the current MPS/Aqua Release Number.

Release History Summary Matrix

System: **MPS/Aqua**

Release Number		1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	5.1	6.0 Beta	6.0 Beta Update 1
Delivery Date		7/30/99	9/2/99	9/24/99	10/25/99	11/18/99	12/17/99	1/21/00	3/17/00	5/12/00	6/22/00	7/28/00	9/14/00
Configuration Item	CI No.												
Core (Client)	1.1	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0
Core (Server)	1.2	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0
SC-PM1 (Client)	1.3	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	5.0	6.0	6.0
SC-PM1 (Server)	1.4	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	5.1	6.0	6.0
GS (Client)	1.5	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	5.0	6.0	6.0
GS (Server)	1.6	1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	5.0	6.0	6.0
IP Input (Client)	1.7	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0
IP Input (Server)	1.8	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0
IP Output (Client)	1.9	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0
IP Output (Server)	2.0	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0
DQM (Client)[1]	2.1												
DQM (Server)[1]	2.2												
Logging (Client)	2.3	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0

---

[1] To be delivered in a future release

Release Number		1.0	1.1	2.0	2.1	2.2	3.0	3.1	4.0	5.0	5.1	6.0 Beta	6.0 Beta Update 1
Delivery Date		7/30/99	9/2/99	9/24/99	10/25/99	11/18/99	12/17/99	1/21/00	3/17/00	5/12/00	6/22/00	7/28/00	9/14/00
Configuration Item	CI No.												
Logging (Server)	2.4	1.0	1.0	2.0	2.0	2.0	3.0	1.0	1.0	1.1	1.1	2.0	2.0
Scenario (Client)[2]	2.5								1.0	1.1	1.1	2.0	2.0
Scenario (Server)[2]	2.6								1.0	1.1	1.1	2.0	2.0
Serial Input (Client)[2]	2.7								1.0	1.1	1.1	2.0	2.0
Serial Input (Server)[2]	2.8								1.0	1.1	1.1	2.0	2.0
Serial Output (Client)[2]	2.9								1.0	1.1	1.1	2.0	2.0
Serial Output (Server)[2]	3.0								1.0	1.1	1.1	2.0	2.0
TxFile (Client)[3]	3.1												
TxFile (Server)[3]	3.2												

[2] New in Release 4.0
[3] New in Release 6.0

Release History Summary Matrix, Continued

System: **MPS/Aqua**

Release Number		6.0	6.1	6.2	6.3	6.4	6.5						
Delivery Date		9/28/00	11/17/00	2/9/01	06/15/01	07/03/01	10/26/01						
Configuration Item	CI No.												
Core (Client)	1.1	2.0	2.0	4.0	4.1	4.1	5.0						
Core (Server)	1.2	2.0	2.0	4.0	4.1	4.1	5.0						
SC-PM1 (Client)	1.3	6.0	6.0	6.2	6.3	6.4	6.5						
SC-PM1 (Server)	1.4	6.0	6.0	6.2	6.3	6.4	6.5						
GS (Client)[7]	1.5	6.0	6.0	6.0	2.0	2.0	3.0						
GS (Server)[7]	1.6	6.0	6.0	6.0	2.0	2.0	3.0						
IP Input (Client)	1.7	2.0	2.0	4.0	4.1	4.1	5.0						
IP Input (Server)	1.8	2.0	2.0	4.0	4.1	4.1	5.0						
IP Output (Client)	1.9	2.0	2.0	4.0	4.1	4.1	5.0						
IP Output (Server)	2.0	2.0	2.0	4.0	4.1	4.1	5.0						
DQM (Client)[4]	2.1												
DQM (Server)[4]	2.2												
Logging (Client)	2.3	2.0	2.0	4.0	4.1	4.1	5.0						

---

[4] To be delivered in a future release

[7] In Release 6.3 the Aura/EOSGS module replaced the Aqua/GSPM1 module

Release Number		6.0	6.1	6.2	6.3	6.4	6.5						
Delivery Date		9/28/00	11/17/00	2/9/01	06/15/01	07/03/01	10/26/01						
Configuration Item	CI No.												
Logging (Server)	2.4	2.0	2.0	4.0	4.1	4.1	5.0						
Scenario (Client)[5]	2.5	2.0	2.0	4.0	4.1	4.1	5.0						
Scenario (Server)[5]	2.6	2.0	2.0	4.0	4.1	4.1	5.0						
Serial Input (Client)[5]	2.7	2.0	2.0	4.0	4.1	4.1	5.0						
Serial Input (Server)[5]	2.8	2.0	2.0	4.0	4.1	4.1	5.0						
Serial Output (Client)[5]	2.9	2.0	2.0	4.0	4.1	4.1	5.0						
Serial Output (Server)[5]	3.0	2.0	2.0	4.0	4.1	4.1	5.0						
TxFile (Client)[6]	3.1	2.0	2.0	4.0	4.1	4.1	5.0						
TxFile (Server)[6]	3.2	2.0	2.0	4.0	4.1	4.1	5.0						
vcProcessor (Client)[8]	3.3				4.1	4.1	5.0						
vcProcessor (Server) [8]	3.4				4.1	4.1	5.0						

---

[5] New in Release 4.0
[6] New in Release 6.0
[8] New in Release 6.3

<u>Attachment G — Mission Systems Configuration Management Form</u>

This attachment contains the completed Mission Systems Configuration Management (MSCM) form for the delivery of MPS/Aqua Release 6.5.

Mission Systems Configuration Management Form

1. ORIGINATOR	2. ORGANIZATION	3. PHONE	4. E-MAIL ADDRESS
Dave Green	CSC	301-805-3420	dsgreen@csc.com

5. ELEMENT	6. INSTALLATION PRIORITY	7. TRACKING NUMBER
ETS (MPS/PM1)	Routine	(Assigned by CM Office)

8. SOURCE CHANGE REQUEST(S):

ETS delivery of MPS for EOS PM-1 (MPS/PM1)

9. APPROVALS

Element Manager	_____	___/___/___
Flight Ops Director	_____	___/___/___
Operations Manager	_____	___/___/___

10. DELIVERED SYSTEM (Check all that apply)

	Name	Version	Media Identification	Identification Date
☐ Hardware	_____	_____	_____	_____
☒ Software	MPS/PM1	R6.5	CD-ROM	10/26/01
☐ Database	_____	_____	_____	_____
☒ Documentation:				
MPS/PM1 delivery package	N/A	via email		10/26/01
_____	_____	_____	_____	
_____	_____	_____	_____	
☐ Other	_____	_____	_____	_____

11. CHANGE DESCRIPTION

Release 6.5 of MPS/PM-1 (MPS/PM-1)

12. ATTACHMENT(S): Check if YES ☒

Description: MPS/PM1 Release 6.5 delivery package (cover letter with attachments) dated 10/26/01

13. CM OFFICE USE

	Location (Bldg/Room)	Slot location(s)
Hardware	___/___	_____
Media	___/___	_____
Documentation	___/___	_____
Installation date	___/___/___	CM Office Signature _____

Form MSCM (970327)